Parks and Recreation Economic Benefit Analysis

ROUND ROCK PARKS AND RECREATION
3/30/2010

Executive Summary

In 2008 the City of Philadelphia, Philadelphia Park Alliance commissioned a study on the economic benefit of parks and recreation amenities. The Alliance brought together leading economist, academics, healthcare, and park professionals for a Colloquium to determine measurable values for analysis. The study has been replicated with comparable results in Washington, D.C., San Diego, Boston, and Sacramento. The report shows how essential places/spaces, parks and recreation activities are an important part of the city's economic and cultural infrastructure. The parks and recreation system can be seen as the woven fabric that connects a community. This fabric may experience tears, spills and alteration but still remains the major visible perception of the city.

The fabric of parks and recreation agencies is also woven into economic value and provides a substantial return on investment for the community. Economic values in Round Rock from property tax, tourism, indirect savings, health care savings, community cohesion, and environmental savings totals **$28,805,486** in 2009. **The City of Round Rock's Park and Recreation Department provided a $2.24 return for every $ 1 dollar invested from the general fund.** The return on investment contributes to the City financially and aligns with the type of community envisioned in 2060.

Consider annually:

- The current inventory of parks generates **$602,504** in additional property tax revenue for residential units in Round Rock. The added value would enable "City Government to provide effective leadership in the investments and plans needed to support a quality community today and tomorrow," of the seven experiences of the Strategic Plan. (Marlowe, 2009)

- Old Settlers Park contributes **$6,300,000** in tourism economic activity. Tourism allows Round Rock to demonstrate one of its seven experiences a "distinctive place psychology and culturally in terms of it's "game on" spirit, its welcoming attitude, it's small town feel, it's values for hard work and community contribution and the cultural experiences it offers." (Marlowe, 2009)

- The citizens of Round Rock through the use of parks and recreation elements save **$5,273,449** in cost for free or reduced opportunities. The citizens of Round Rock can be assured that they have a "positive experience of each transaction and believe they received good value for their tax payment or fee." (Marlowe, 2009)

- Park and recreation amenities contribute to **$7,007,783** in health care savings. Through this savings "the character of any community is determined by the people who populate it." This group of healthily and productive people provide the foundation for "Round Rock to be economically competitive and prosperous."(Marlowe, 2009)

The degree to which parks and recreation contribute to the economic and social well being of the community should be elevated due to the strong return on investment. “To attract and retain residents and businesses in the 21st century, cities have no choice but to provide residents with the best possible quality of life.” (Philadelphia Park Alliance, 2008) This theme of creating a high quality of life that is preferred is echoed again in the City of Round Rock’s vision:

“Round Rock will be the City of Choice for entrepreneurs, business leaders, researchers, educators, and members of the various creative professions who want to combine professional accomplishments and achievement with a culturally rich, socially diverse and family friendly lifestyle. At the same time it will offer the opportunities for personal growth, safety, and well being for all its residents.”

Introduction

Parks and recreation amenities and programs provide a fabric that weaves through a community. Parks and recreation amenities contribute directly to the economic wealth of the community through increased property values and tourism activity. Value to the citizens is found with savings for direct use and health care cost. The community as a whole finds value in cost avoidance through community cohesion and air quality.

These financial values link and align with the three guiding principles of the Strategic Plan, adopted in April of 2009.

- *Principle One: Diversification. The City will seek to diversify its economy including diverse economic sectors and a range of employment, provide a range of transportation options, and ensure there is a diversity of housing choices, a diversity of cultural and recreational options, and a diversity of educational opportunities.*

- *Principle Two: Provide Seven Experiences. Every resident, visitor or business will experience the following:*

    1) A distinctive sense of place
    2) Opportunity
    3) Easy access to the City
    4) A safe and secure community
    5) Enrichment and fun
    6) Personal and professional growth
    7) Personalized services leading to confidence and trust in City government

- *Principle Three: Relationships. The City will seek to develop and maintain a broad range of relationships with the private sector, with neighborhoods and civic groups, with neighboring governments and with professional associations as a means to develop partnerships, identify opportunities and leverage resources.*

This densely woven community character provides many opportunities to develop relationships with our neighbors through space at community events such as Christmas Family Night, The 4th of July Celebration or the next season of youth sports. The relationships built here touch lives through out the journey of life in Round Rock and ultimately provide the foundation for giving back to the community through volunteerism of time, financial resources or a shoulder to lean on.

Dr. John Crompton (2007) presents in his monograph *Community Benefits and Repositioning* three over arching benefits from park and recreation amenities. The advantages of economic prosperity, environmental sustainability, and alleviation of social problems are sub-divided into 19 other specific benefits. Many of these benefits are

intrinsic or difficult to provide measurable observations. This work laid the foundation for the Trust for Public Land ground breaking efforts.

The Trust for Public Land gathered experts in the fields of parks and economists together at Philadelphia in 2003 for “a colloquium to analyze how park systems economically benefit cities” (Harnik & Welle, 2009). This event led to further consultations with other leading economist, academics, and professionals that identify seven attributes that provide direct financial and economic impact to communities and is measurable. The seven attributes are: Increased property value (direct), Tourism (direct), Cost of recreation opportunities (savings), Health benefits (savings), Community cohesion (savings), Water pollution (environmental savings) and Air pollution (environmental savings) (Harnik & Welle, 2009).

The values and rational described in the body of this paper demonstrate the economic value and return on investment of a parks and recreation system for creating places and spaces, safety and security, economic progress and high value governance within the community of Round Rock.

Increasing Hedonic (Property) Value

In the parks and recreation profession, studies have been performed in the past two decades to determine that park, open space and preservation land has a direct monetary impact to residential property values. "The Proximity Principle developed by Dr. John Crompton of Texas A&M University is a theory that people are willing to pay more for their home when it is close to a park or green space." (Halff, 2009)

The Proximity Principle divides homes into different zones based on the distance from the park land. The assumption is that properties closer to park land has a higher property value and the value decreases as the home moves away from the park land. The property value reaches equilibrium at between 2,000-3,200 feet away from the park. The increase in value as been shown in several locations around the country and is presented in the table below. (Crompton, 2004)

Cities Where the Proximity Principle Was Proven		
Study Site	Open Space Type	Property Value Impact
Boston, MA	30 acres of greenway	Property value decreased by 6% when the distance from the park doubles
Chicago, IL	24.6 acre park	Increased property value by $100 per square foot
Portland, OF	Public parks	Increased property value 1-3% within 1,500 ft of the park
Boulder, CO	Greenbelts	Price of homes decreased in price for every foot removed from the greenbelt
Howard County, MD	Open Forest	Increase property value 3 times
Salo, Finland	Urban Forest	Property value decreased 5.9% for every kilometer in distance

(Harnik and Welle, 2009)

Round Rock is unique in the fact that property values appreciated across the board up through 2008. Data was collected from the Parks and Recreation Master Plan that identified homes purchased between 1997 and July 2008, that were within 600 feet of a park paid **a premium purchase price of 15.4% over** those farther than 600 ft. While the percent of premium ranges from 5%-25% vary within market, previous studies from Geoghegan, Wainger, and Bockstael (1997) along with Irwin (2002) verify a correlation of the increased value.

Using the conservative model from the Trust for Public Lands, we can calculate the impact to property tax as it relates to the proximity to parks and open space. "The preponderance of studies has revealed that excellent parks tend to add 15% to the value

of a proximate dwelling; on the other hand, problematic parks can subtract 5% of home value. Taking an average of this range yields the 5% value that will be used" (Harnik & Welle, 2009).

Using this methodology we can determine the effect of parks value to the City of Round Rock.

The Hedonic (Property) Value of Round Rocks Parks and Open Space	
Total Value inside City Limits	$3,947,991,546
Value of Properties within 600 ft of parks	$ 3,038,270,861
Assumed average of a park	5%
Value of properties attributed to parks	$151,913,543
Effective annual residential tax rate	.0039661
Annual property tax capture from value of property tax due to parks	**$602,504**

The results of the GIS data indicate that currently 74.8% of our residents live within 600 feet of a park and the average home value is $1,876 greater.

The modeling for increased property value builds a foundation for supporting sound business and financial practices that demonstrate a return on investment (ROI) for deployment of resources. Through these efforts a "high level of confidence and trust in City government" is instilled in the public, so they will be able to make the needed "investments for the future of the City of Round Rock" (Marlowe, 2009).

Tourism Value

Round Rock recognized the value of parks in tourism with the establishment of the Sports Capital of Texas. "The tourism system is activated by attractions. Only in rare cases do people leave their home and travel some distance by automobile, airplane, or ship because they want to stay in a particular hotel or dine at a particular restaurant in a different locale" (Crompton, 1999). Crompton also indicates further, that based on the taxonomy of attractions "that in most communities, pleasure travel is a business that the public sector drives, and park and recreation agencies are central to that business." This conclusion is based on the types of events that activate tourism and generally include; Events and Festivals, Aquatic and Coastal areas, Outdoor Recreation, Sports, Fitness and Wellness Centers, and Local Parks.

Through the partnership of the Conventions/Visitors Bureau and Parks and Recreation Department local, regional, state and national tournaments visit the Round Rock community.

Financial impact is derived in direct and indirect economic activity. These values demonstrate a small part of our current and future system as an economic driver for the City. On a larger scale than Old Settlers Park, parks such as National Historic Park in Philadelphia, Central Park in New York, Millennium Park in Chicago, or Balboa Park in San Diego are destination tourist attractions (Harnik & Welle, 2009).

For example the City of San Diego research indicates:

- 16,050,000 overnight visitors
- 3,210,000 (20%) visited parks
- 834,600 (26%) visited *because* of the parks
- $87,301,200 spending of overnight visitors *because* of parks

Philadelphia research indicated similar results:

- 342,000 (8% of tourist) overnight visitors visited *because* of parks
- $40,263,000 spending of overnight tourist *because* of parks

Our model for determining tourism value includes direct economic activity. The information presented is for events that were held at City of Round Rock facilities only as part of this report. **Total economic activity supported by Parks and Recreation Facilities is approximately $6,300,000 annually**. This income represents out of town visitors and locals that participate and support these sporting events. This is from over 53,000 out of town users of our facilities. **This figure represents events at Old Settlers Park only.** This report doesn't include casual users that may use the parks that attend other City sponsored events or Round Rock Express sponsored events.

The dollars returned to the community support this as a viable economic vitality strategy and data supports a real need to "maintain and strengthen the City's current strengths in destination retail, sports marketing, computers and supply chain management" (Marlowe, 2009).

Direct Use Value

Parks and recreation systems provide an intrinsic value and benefit to the community. "Economists call these activities "direct uses" (Harnik & Welle, 2009). The value of activities such as team sports, individual exercise, nature watching, extreme sports and passive activities all hold value to the community.

While most of the activities are free of charge or minimal cost the value can be calculated by understanding the cost of similar recreation activities offered in the private sector. "This is known as the willingness to pay" (Harnik & Welle, 2009). The premise is if parks and recreation activities were not available, how much the consumer would pay out of pocket to experience the activity at a commercial organization. The community would in fact see a savings for residents rather than income or economic impact.

"The model used to quantify the benefits received by the direct users is based in the "Unit Day Value" method developed in 2001 by the U.S Army Corps of Engineers (USACE)" (Harnik & Welle, 2009). Activity cost for our study is taken from similar experiences found in the study for Philadelphia and Boston. While we acknowledge that regional variances occur, the USACE study indicates that our prices are within range. The USACE breaks down the cost by adult or child, for our analysis we used the average cost of the two. Park and Recreation users are counted on the basis of actual and estimated uses for our system. The estimates are conservative estimates based on surveys, visual observation, and professional judgment. The intent is to further refine the data to determine better estimate ranges in the future. The cost estimates are also weighted slightly for multiple users. The model is modified slightly for diminishing returns for these frequent users.

Shared Benefits: The Economic Value of Direct Use			
Use Type	**User Visits**	**Average Value per Visit**	**Value**
General park use	486,375	$2.39	$1,162,950
Sport facility use	851,640	$2.63	$2,294,422
Special use	64,196	$28.28	$1,816,076
Totals	1,402,210		**$5,273,449**

"While some might claim that direct use value is not as "real" as tax or tourism revenue, it nevertheless has true meaning" (Harnik & Welle, 2009). It is given, that not all park and recreation activities would be used if required purchase, however the community does gain personally through "exceptional value for the tax dollar."

Health Value

Lack of physical activity has been a mainstream issue with all of the attention to obese children and the rise of type II diabetes. Multiple studies are documenting the rising cost of our sedentary lifestyles. “Recent research suggests that access to parks can help people increase their level of physical activity” (Harnik & Welle, 2009). This research can also be associated with recreational opportunities that involve fitness, sports and active lifestyle programs which are traditionally offered by park and recreation agencies. “The Parks Health Benefits Calculator measures residents’ collective economic savings through the use of parks for exercise” (Harnik & Welle, 2009).

This study is limited to physical activity and doesn’t include mental health. Boyles and Chang in WebMD (2009) reported that “close proximity to green spaces was associated with less depression, anxiety and other health problems in a newly published study. The relationship was strongest for children and people with low incomes.” While the research is promising at this time more work is required to financially quantify impact to mental health.

The Parks Health Benefits Calculator is developed through analysis of the common types of medical problems that are related due to lack of physical activity. Heart disease and diabetes Type II are among the most common medical issues associated with inactivity. Secondly the Calculator uses cost savings created from studies in “seven different states that show a $250 cost difference between those that exercise regularly and those who don’t” (Harnik & Welle, 2009). The study also indicated a higher cost savings of $500 for people over the age of 65.

Data from the Center for Disease Control (CDC) indicate that 44.4% of Texans engage in moderate to vigorous physical activity. Texas Department of Health data indicates 38.6% engage in this high level physical activity. The median of 41.5% was used for estimating the members of our community that meet the level of high physical exercise in Round Rock. In order to better define the number of citizens that meet this level of activity in our parks for our study a need to account for private health club users, needs to be evaluated. According to the National Sporting Goods Association (NSGA) 2008 Participation Report, 39.3% of the participants use health clubs. While it can be assumed that some of these users do use our facilities we will only add in our 2,800 fitness memberships from CMRC for any offset. Moderate to vigorous activity was defined as “at least 30 minutes of moderate to vigorous activity at least 3 days per week” (CDC, 2007).This type of activity was deemed by research as optimal for sustained health benefits. Data was used from the CDC to estimate the cost savings for Round Rock based on our population as compared to the Texas averages. The population assumption used for Round Rock is 97,000. The State Cost Multiplier indicates health care cost in relation to an index across the country. The 2008 multiplier for Texas is 1.53 (Kaiser Family Foundation, 2009).

Health Care Cost Savings: Physically Active Users of Round Rock Parks and Recreational Programs 2008			
Cost Description	Residents Physically Active in Parks*	Average Medical Cost Difference between active and inactive persons	Amount
Adult users under 65 years of age	**15,213**	**$250**	**$3,803,250**
Adult users 65 years of age and older	**1,554**	**$500**	**$ 777,000**
Sub totals	**16,767**	**-**	**$ 4,580,250**
State cost multiplier (based on statewide medical cost)			**1.53**
Total Value			**$7,007,783**
*People engaging in moderate to vigorous physical activity (3x per week minimum 30 minutes)			

Health care cost avoidance supports the Recreation, Arts, and Cultural Strategic Initiative. St. David's Round Rock Medical Center, Round Rock reviewed this section with the Cardiology group and commented "The cardiologists feel there is a documented benefit from exercise." The continued investment in parks and recreation provides "residents of the City opportunities to engage in healthy behaviors" (Harnik & Welle, 2009). These healthy behaviors could impact the talent pool through fewer lost days and improved productivity in the workplace.

Community Cohesion Value

Parks and Recreation agencies and their facilities have been called the social fabric of the community. The wide variety of opportunities that are offered by these agencies for citizens to interact with each other through a common interest weaves the thread of relationships that build community.

These relationships and subsequent sense of community promotes cohesion that supports stronger, safer and better cities. "Any institution that promotes this kind of community cohesion-whether a club, a school, a political campaign, religious institution, homeowners or advocacy groups adds value to a neighborhood and, by extension, to the whole city" (Harnik & Welle, 2009).

The value of community cohesion is expressed in social capital. Social capital is built through common experiences shared in the community. These experiences are formed during volunteer efforts that serve a higher purpose in the community.

"While the economic value of social capital cannot be measured directly, it is instructive to tally the amount of time and money that residents devote to parks and recreation activities" (Harnik & Welle, 2009). The amount of effort expended by these groups serves a reflection of the importance and value of a parks and recreation system.

The value is arrived at taking the total number of volunteer hours and then multiplying by the value assigned to volunteerism by the nation organization. Independent Sector (2009) a leadership forum for charities, foundations and corporate giving annually develops the value of volunteer time. The latest value for Texas volunteers is from the year 2007 and is $20.80 per hour. This figure includes salary and fringe benefits for its calculation.

Community Cohesion Value: Park Supporters			
Volunteer Hours	Value of Volunteer Hours	Financial Contribution (cash & in-kind)	Total
9552.5	**$198,692**	**$41,563**	**$240,255**

The hours alone equate to nearly 5 full-time positions dedicated to making Round Rock a quality place to live. Organizations and groups such as the Round Rock Community Foundation, People and Parks, the Kinsington Home Owners Association have contributed both time and financial resources. We have over 60 groups that support our efforts to create community through our special events and programs.

Removal of Air Pollution by Vegetation

Air Quality is an issue that several locations around the state are wrestling to solve. Air Quality plays a role in the quality of life for residents and business alike when making decisions in relocation or starting a family. Air Quality has an impact on both man made structures and the human body. Poor quality of air damages structures and impacts the cardiovascular and respiratory systems of our citizens. This impact increases repair and replacement cost as well as medical cost in the long term.

"Trees and shrubs remove air pollutants such as nitrogen dioxide, sulfur dioxide, carbon monoxide, ozone, and some particulates. Leaves absorb gases, and particulates adhere to the plant surface at least temporarily" (Harnik & Welle, 2009). Vegetation cover in parks plays a key role in improving the air quality and subsequent quality of life for the community.

In an effort to assign a value to park vegetation as a contributor to air quality, "the Northeast Research Station of the U.S Forest Service in Syracuse, New York, designed an air pollution calculator to estimate pollution removal and value for urban tree cover. The calculator is based on a U.S. Forest Service model Urban Forest Effects (UFORE). This model takes into account concentration, type of tree, location, and seasonal leaf variation.

Round Rock's tree cover was determined through the use of GIS and topographical maps of parks and open spaces. The tree coverage was determined as acreage of cover. Monetary value is calculated using the externality value for the pollutant. "The externality value refers to the amount it would otherwise cost to prevent a unit of pollutant from entering the atmosphere" (Harnik & Welle, 2009).

Air Pollution Removal of Round Rock Parks			
Pollutant Type	Lbs of Pollutant Removed	Dollars Saved per lb Removed	Total Pollutant Removal Value
Carbon Dioxide	1,575.88	0.44	$ 685.51
Nitrogen Dioxide	91,947.42	3.06	$281,680.93
Ozone	17,453.82	3.06	$ 53,469.77
Particular Matter	25,190.45	2.05	$ 51,527.07
Sulfur Dioxide	9,215.961	0.75	$ 6,911.97
Total			**$394,275.26**
*Base on the city's tree cover in park land of 512 acres			

The benefit of tree cover is a cost avoidance measure and "supports policies and efforts that will promote public health." Further alignment with the strategic plan is found in high value governance through maintaining "and enhancing public confidence, satisfaction and trust in City government" by doing the right things right (Marlowe, 2009).

Conclusion

The study of economic benefits for park and recreation systems is in the early stages. However the initial study has been replicated in several areas across the nation. The data presented provides useful information to assist leaders in making informed decisions on expenditure of public funds that drive returns on investments. The analysis doesn't cover many items that contribute to the community because of the difficulty in quantifying the results.

The intent is to show how parks and recreation contribute directly to the economic and social fabric of the community. These measurable outputs for the Parks and Recreation Department are woven through the City's vision, three guiding principles, themes, objectives and specific action items. The degree of influence of the Strategic Plan and subsequent return on investment makes a compelling argument to support parks and recreation as an economic catalyst.

The importance parks and recreation contribute to the economic and social well being of the community should be elevated due to the strong return on investment. "To attract and retain residents and businesses in the 21st century, cities have no choice but to provide residents with the best possible quality of life" (Philadelphia Park Alliance, 2008). This theme of creating a high quality of life that is preferred is echoed again in the City of Round Rock's vision:

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References

Boyles, S & Chang, L MD. (2009) Study shows people living near parks less likely to have depression. Parks, Green Spaces Protect your Health. October 14, 2009. http://www.webmd.com/mental-health/news/20091014/parks-green-spaces-protect-your-health

Center for Disease Control (2007) Texas-2007 physical activity. Behavioral Risk factor Surveillance System. Retrieved December 11, 2009. http://apps.nccd.gov/brfss/age.asp?cat=PA&yr=2007&qkey=4418&state=TX

Crompton, J. (1999) Measuring the economic impact of visitors to sports tournaments and special events. National Parks and Recreation Association. Ashburn,Virginia

Crompton, J. (2004) The impact of parks, open space, and water features on residential property values and the property tax base. *The Proximate Principle*. 2nd edition. National Parks and Recreation Association. Ashburn, Virginia

Crompton, J (2007) The keys to park and recreation's future viability. Community Benefits and Repositioning. National Parks and Recreation Association. Ashburn, Virginia

Geoghegan, J., Waingner, L, & Bockstael, N. (1997) Spatial landscaping indices in a hedonic framework: an ecological economics analysis using GIS.*" Ecological Economics.* (1997) 23 p 251-264

Harnik, P and Welle, B. (2009) Measuring the economic value of a city park system. *Trust for Public Land*, Report. San Francisco, California

Halff Associates. (2009). Game Plan 2020: Building an active community. City of Round Rock, Texas

Independent Sector. (2009) Value of Volunteer time. Retrieved December 29, 2009. http://www.independentsector.org/programs/research/volunteer_time.html

Irwin, E. (2002) The effects of open space on residential property values. *Land Economics*. (2002) 78(4) p 465-480

Kaiser Family Foundation, (2009) Texas Federal Rate Multiplier. Statehealthfacts.org. Retrieved December 14, 2009. http://statehealthfacts.kff.org/profileind.jsp?cmprgm=4&ind=184&sub=47

Marlow, H Dr. (2009) Strategic plan for the City of Round Rock, Texas. Game On, 2060. Adopted April23, 2009.

Philadelphia Parks Alliance. (2008) How much does the City of Philadelphia receive form its park and recreation system? June 2008

National Sporting Goods Association, (2009) 2008 Participation Survey. http://www.nsga.org/files/public/2008ParticipationRankedbyAlpha_4Web_080415.pdf Retrieved January 27, 2010.

USACE, (2001). Unit day values for recreation. Economic Guidance Memorandum 01-01. Retrieved December 29, 2009. http://www.usace.army.mil/CECW/PlanningCOP/Documents/egms/egm01-01.pdf